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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,963	01/29/2007	Dane Cubric	P08870US00/MP	3348

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EXAMINER

CHANG, HANWAY

ART UNIT	PAPER NUMBER
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2881

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02/18/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/569,963	CUBRIC ET AL.	
	Examiner	Art Unit	
	Hanway Chang	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/28/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 12, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adamec et al. (WO 01/084592, hereinafter Adamec) in view of Mook et al. ("Construction and characterization of the fringe field...", Ultramicroscopy 81 (2000), pgs. 129-139, hereinafter Mook) and in view of Eguchi et al. (US Pat. RE37,717, hereinafter Eguchi).

Regarding claim 1, Fig. 16 of Adamec discloses a particle source (2) for producing a primary beam of electrically charged particles (4) (see page 12 lines 32 – page 13 line 7); a filter assembly (17) (see page 16, lines 24-31) located after the particle source (2) and an aperture plate (25) (see page 13, lines 2-7) containing at least one aperture for shaping the particle beam (4), located between the particle source (2) and the filter assembly (17). Adamec discloses the filter assembly is a Wien filter (see page 16, lines 24-31). Adamec does not disclose this filter is a monochromator. Mook

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discloses that Wien filters may be used as a monochromator (pages 129-130, second to last line to end of paragraph). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the Wien filter to act like a monochromator as art recognized equivalents.

Adamec further does not disclose that the aperture plate (25) is adjustable with respect to the filter assembly (17) during normal operation of the apparatus so that the size of the aperture (25) for shaping the particle beam (4) can be varied. However, Figs. 5A and 5b of Eguchi disclose an aperture that is adjustable such that the size of the aperture for shaping the beam can be varied (see col. 6, lines 27-46). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Adamec by having an aperture plate be adjustable for the purpose of having improved resolution as taught by Eguchi (see col. 1, lines 53-61).

Regarding claims 2 and 3, a difference between Adamec and the claimed invention is the aperture plate contains two or more apertures of different sizes. However, Figs. 5A and 5B of Eguchi disclose an adjustable aperture (see col. 6, lines 27-46). It should be noted that when the aperture changes in size, it is seen as a different aperture. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention Adamec by having an aperture plate be adjustable for the purpose of having improved resolution as taught by Eguchi (see col. 1, lines 53-61).

Regarding claims 4-6, a difference between Adamec and the claimed invention is the aperture plate is formed from two or more partial plates. However, Figs. 5A and 5B of Eguchi disclose the aperture is formed by multiple partial plates (21a-d) (see col. 6, lines 27-46). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention Adamec by having an aperture plate be adjustable by partial plates for the purpose of having improved resolution as taught by Eguchi (see col. 1, lines 53-61).

Regarding claim 7, a difference between Adamec and the claimed invention is the aperture plate is adjustable using mechanical control means. However, Figs. 5A and 5B of Eguchi disclose the blades of the aperture (21a-d) are controlled by the rotary unit (20) to vary the size of the aperture (see col. 6, lines 27-46). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention Adamec by having an aperture plate be adjustable for the purpose of having improved resolution as taught by Eguchi (see col. 1, lines 53-61).

Regarding claims 8 and 9, a difference between Adamec and the claimed invention is the mechanical control means is made from electrically insulating material (Aluminum Oxide). However, Mook discloses a known electrically insulating material is aluminum oxide (see page 131, col. 1-2, last three lines to end of paragraph). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to use aluminum oxide for the purpose of the control means not being influenced by the charged particle beam during normal operation.

Regarding claims 12 and 14, a difference between Adamec and the claimed invention is the aperture plate is adjustable using means responsive to incident optical radiation (electronic control). However, Fig. 2 of Eguchi discloses the aperture plate is adjustable in response to incident optical radiation (see col. 5-6, lines 42-46). It should be noted that the incident optical radiation is the information gathered from the thickness detection mean (6a) to affect the aperture varying means (3). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to have the aperture plate be adjustable in response to optical radiation for the purpose of having improved resolution.

Regarding claim 15, Fig. 16 of Adamec discloses a particle gun (2) (see page 7, lines 15-22) comprising the particle source and a gun lens (not shown) located after the particle source for focusing the beam, the aperture plate (25) being located between the gun lens and the monochromator filter assembly (17) (see Fig. 16). It should be noted that while the gun lens is not shown, it would have been obvious at the time of invention to a person of ordinary skill in the art for a gun lens to be present in one of the electron gun sources listed in Adamec.

Regarding claim 16, Fig. 16 of Adamec discloses a particle gun comprising the particle source (2) and a gun lens (10) located after the particle source for focusing the beam (see page 8, lines 12-18), the aperture plate (25) being located between the particle source (2) and the gun lens (10).

Regarding claim 17, Fig. 16 of Adamec discloses the monochromator filter assembly (17) is a Wien filter (see page 16, lines 24-33).

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adamec in view of Mook and in view of Eguchi as applied to claim 1 above, and further in view of Brakenhoff (US Pat. 4,880,294, hereinafter Brakenhoff).

Regarding claims 10 and 11, a difference between Adamec and the claimed invention is the aperture plate is adjustable using electron control means (piezoelectric control). However, Brakenhoff teaches that piezoelectric control means are commonly used because of very accurate adjustability over small distances (see col. 2, lines 50-68). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Adamec by using piezoelectric control means to adjust the aperture plates for the purpose of precise adjustments of the size of the aperture.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adamec in view of Mook and in view of Eguchi as applied to claim 12 above, and further in view of Brittell (US Pat. 5,749,646, hereinafter Brittell).

Regarding claim 13, a difference between Adamec and the claimed invention is the means responsive to incident optical radiation is a bimetallic component. However, it is known that bimetallic components are used for response to incident optical radiation as shown in Brittell (see col. 1, lines 46-48). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the

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invention of Adamec to use a bimetallic component for the purpose of having a switch to control where the charged particle beam should be.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Examiner has noted that the applicant has claimed priority to PCT/GB04/003637 which was not found in the file wrapper. As such, Examiner has included the required documents.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanway Chang whose telephone number is (571)270-5766. The examiner can normally be reached on Monday to Friday 7:30 AM till 4 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hanway Chang
February 4, 2010
/H. C./
Examiner, Art Unit 2881

/ROBERT KIM/
Supervisory Patent Examiner, Art Unit 2881